Space Weather Forecast

Issued on Thursday 7 November 2024 at 00:11 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High solar activity with further Moderate flares expected. Chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been High, with an impulsive Strong-class flare observed at 06/1340 UTC from a large and magnetically complex region in the southeast. There have also been numerous other Moderate-class flares, predominantly from the aforementioned region plus another large region also located in the southeast quadrant of the visible disc.

There are currently eight numbered sunspot regions on the visible disc, with the leading edge of a new region beginning to emerge at the east limb. The two most magnetically complex and recently active regions are located in the southeast quadrant. Both regions are large and contain numerous spots, and continue to show slow spot evolution, with the westernmost group having a delta spot configuration in its intermediate portion. There is another large spot located in the northwest, however this has been stable and largely inactive. Remaining spot regions are smaller and magnetically simpler, and either stable or in decay.

No Earth directed CMEs (Coronal Mass Ejections) were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were at Slightly Elevated levels for much of the period, but speeds decreased after 06/1500 UTC toward background levels. The Interplanetary Magnetic Field was Weak throughout, with the north-south component varying weakly between positive and negative directions. Geomagnetic Activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels through the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High solar activity is forecast to continue with occasional Moderate flares expected and a chance of isolated Strong flares. These most likely from the two large regions currently in the southeast quadrant of the disc.

Solar Wind / Geomagnetic Activity: A minor enhancement is possible late Day 1 (07 Nov) into Day 2 (08 Nov) from a small equatorial coronal hole, with further possible faster solar wind influence late in period from a larger but southerly located coronal hole.

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A Coronal Mass Ejection (CME) observed near the east limb in association with a Moderate-class flare from a sunspot region in the southeast. on 04 Nov. Although the bulk of the ejecta appears to pass behind Earth's orbit, a faint partial halo of material (mainly shock) appears to pass the Earth-Sun line. There is a chance of a glancing impact from this feature in the next few hours with low confidence.

Geomagnetic activity is expected to be generally Quiet through Day 1 (07 Nov), but potentially becoming Unsettled to Active with a slight chance of G1/Minor Storm intervals depending on any potential glancing CME influence. On Days 2-4 (08-10 Nov) activity should be Quiet to Unsettled, with a chance of isolated Active intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is at background levels, with only a slight chance of enhancement above S1/Minor Storm levels.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	20	10	10	20
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	90	90	90	90
Very Active	**R3-R5 (X Class)**	Yes	25	25	25	25

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	15	15	15	15
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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